

# PATENT SPECIFICATION

727,939



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## COMPLETE SPECIFICATION

### Spraying Device

I, MAURICE WOLFE, of 95, Warrigal Road, Mentone, Victoria, Australia, a British Subject, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a spraying device of the kind wherein means are provided whereby part of a stream of liquid flowing through the device may be caused to pass through a container for a soluble or miscible substance and then return to the main stream of liquid passing to a spray outlet.

In one form of such device heretofore proposed, separately controllable taps in the main and by-pass passage enable the flow through the device to be controlled so that the liquid may be caused to pass partly through the main passage and partly through the by-pass passage.

The present invention has for its object to provide an improved construction of device of the kind referred to which is of a simple compact construction and easily controllable for delivery to the outlet, of either liquid alone or liquid containing a proportion of soluble or miscible substance from the container.

According to the invention, a spraying device of the kind referred to is characterised in that a single control member actuates valve means controlling flow of liquid through a main passage and also valve means controlling flow of liquid through a by-pass passage communicating with said container.

In one position of the control member the by-pass passage may be closed and a valve controlling the main passage partly open. and in another position of said member, the by-pass passage may be open and the valve controlling the main passage fully open. Means may be provided for preventing movement of the said valve beyond said

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first-mentioned position when so desired.

The container may communicate with the outlet through a return passage regulated by an adjustable needle valve.

The main passage may be controlled by a valve carried by an axially movable spindle intersecting the by-pass passage and having a reduced part forming a valve to open the by-pass when the valve controlling the main passage is fully open. Part of the valve spindle projecting externally of the device for co-operation with a control member, such as a lever, may be provided with an arm movable from an inoperative position to a position in which it obstructs movement of the valve spindle to open the by-pass passage. The device may comprise a body in which the valve spindle is vertically disposed, means at opposite ends of the body for detachably mounting an outlet pipe and said container, means at one side of the body for detachably connecting an inlet pipe, and a hand lever pivoted to the body and adapted to operate said valve spindle against the action of a return spring. The said container may be adapted to serve as a handle, said lever extending beneath said container.

The invention is hereinafter described, by way of example, with reference to the accompanying diagrammatic drawings, in which: Fig. 1 is a perspective view of a spraying device constructed according to the invention;

Fig. 2 is a perspective view in which the device is shown divided into two parts for the purpose of illustrating its construction;

Fig. 3 is a view in sectional elevation taken at right angles to the section of Fig. 2;

Fig. 4 is a view in section taken on the line 4—4 of Fig. 2;

Fig. 5 is a view in elevation showing the various positions of the operating lever;

Fig. 6 is a cut-away perspective view of the device, showing the operating lever in 90

its first position; and

Fig. 7 is a view similar to Fig. 6 showing the operating lever in its second position.

Referring to the drawings, the reference numeral 10 indicates the body of the spraying device. An inlet pipe 11 is screwed to the body 10 and is connected to a source of water or other liquid under pressure, for example, to the water supply mains. A spray bar 12 of any convenient shape and size is also attached to the body 10 and is provided at its free end with a spray nozzle 13. The nozzle 13 may be detachable and is provided with an aperture 14 through which liquid is delivered in the form of a spray. A non-return valve (not shown) may be provided in the water inlet.

The inlet pipe 11 communicates with a passage or chamber 15 within the body 10 and this passage 15 communicates through an aperture 16 with a passage 17 which communicates with the inner end of the spray bar 12. The aperture 16 is capable of being closed by a valve 18 which is adapted to engage a valve seat 19 formed in the body 10. The valve 18 is mounted on a spindle 20 and is urged towards its closed position by a spring 21 the outer end of which bears against the inner surface of a cap 22 which is screwed into a threaded aperture in the body 10. A gasket or washer 23 is fitted between a flange on the cap 22 and the surface of the body 10.

The spindle 20 is capable of longitudinal and rotary movement in a hole or recess 24 formed in the body. The spindle 20 is moved longitudinally in the hole 24 by means of a lever 25 which is pivoted to a lug 26 formed on the body 10. The lever is mounted so as to be capable of convenient operation by the fingers of the operator while the device is held in the hand. An arm 27 is attached to the spindle 20 between the lever 25 and the body 10 and is capable of being moved to either of two positions one of which is illustrated in Fig. 6 and the other in Fig. 7. When the arm 27 is in the position shown in Fig. 6 a projection 28 on the end of the arm 27 engages an abutment 29 on the body 10 when the spindle 20 has been moved by the lever 25 through a limited distance only as shown in Fig. 6. When the arm 27 is moved through 90° to the position shown in Fig. 7 the projection 28 is located to one side of the abutment 29 and the spindle 20 may then be moved through a further distance by operation of the lever 25 as shown in Fig. 7.

A cylindrical receptacle 30 is detachably secured to the body 10. Conveniently the receptacle 30 is provided with an externally threaded neck 31 which is screwed into an internally threaded boss 32 on the body 10, a gasket or washer 33 being disposed between the end of the boss 32 and a shoulder

on the receptacle 30. The receptacle 30 is adapted to contain a detergent or other substance which is to be mixed with the liquid and the said substance may be in powder, paste, liquid or other form.

A by-pass passage 34 is provided in the body 10 and connects at one end with the passage 15 and at the other end with a tube 35 which extends within the receptacle 30 to a point near the closed end thereof. The hole 24 through which the spindle 20 passes is arranged to intersect the by-pass passage 34. The spindle 20 is formed with a waist or reduced portion 36 which is moved into alignment with the by-pass passage 34 when the spindle 20 is moved to its innermost position as shown in Fig. 7. A pair of sealing rings 41 is provided on the spindle 20 on opposite sides of the by-pass passage 34 in order to prevent leakage of liquid between the spindle 20 and the wall of the passage in which it is mounted. When the spindle is in its outermost position as shown in Fig. 3 or in its intermediate position as shown in Fig. 6 the by-pass passage 34 is closed by the spindle 20. The spindle 20 thus functions as a valve to open or close the by-pass passage 34 as well as opening or closing the aperture 16 by means of the valve 18 on said spindle.

A return passage 37 extends between the receptacle 30 and the passage 15. The flow of liquid through the return passage 37 is regulated by a needle valve 38 which is mounted on the inner end of a set screw 39 which is screwed into a threaded aperture in the body 10, a flanged head 40 being provided on the set screw 39 for easy manipulation by the operator.

In use, the device is connected to a source of water or other liquid under pressure by means of a flexible hose attached to the inlet pipe 11. The device is held by clamping the hand around the receptacle 30 with the fingers engaging the lever 25 and the device is positioned so that the spray from the nozzle 13 is directed towards the surface or article to be sprayed. When it is desired to deliver only liquid through the nozzle the arm 27 is moved to the position shown in Fig. 6 and the lever is moved to the position shown in chain dotted lines in Fig. 5. Further movement of the lever is prevented by the projection 28 engaging the abutment 29. This movement of the spindle 20 opens the valve 18 as shown in Fig. 6 and allows liquid to flow from the inlet pipe 11 through the passage 15, aperture 16, passage 17 and spray bar 12 to the nozzle 13 from which it is delivered in the form of a spray. The spray will continue while the lever 25 is held in this position.

When it is desired to deliver a solution or dispersion comprising a mixture of the liquid with the detergent or other substance con-

tained in the receptacle 30, the arm 27 is moved to the position shown in Fig. 7 and the lever 25 is moved to the position shown in dotted lines in Fig. 5. This causes the spindle 20 to be moved to its innermost position as shown in Fig. 7, thus fully opening the valve 18 and placing the waist 36 in alignment with the by-pass passage 34. Part of the liquid then flows from the passage 15 through the by-pass passage 34 and tube 35 to the interior of the receptacle 30 where it mixes with the detergent or other substance in said receptacle. The mixture of liquid and detergent then passes from the receptacle 30 through the return passage 37 to the passage or chamber 15 where it mixes with the main body of liquid flowing through said passage. This forms a more dilute solution or dispersion of the detergent or other substance in the liquid and the solution or dispersion so formed, then flows through the aperture 16, passage 17 and spray bar 12 to the nozzle 13 from which it is ejected in the form of a spray.

The proportion of detergent or other substance contained in the solution or dispersion delivered by the device can be regulated by adjusting the set screw 39 so as to alter the position of the needle valve 38. This effects a variation of the quantity of detergent or other substance which is returned to the passage 15 and mixes with the liquid flowing therethrough, and consequently enables adjustment of the quantity of detergent or other substance added to the liquid.

What I claim is:—

1. A spraying device of the kind wherein means are provided whereby part of a stream of liquid flowing through the device may be caused to pass through a container for a soluble or miscible substance and then return to the main stream of liquid passing to a spray outlet, characterised in that a single control member actuates valve means controlling flow of liquid through a main passage and also valve means controlling flow of liquid through a by-pass passage communicating with said container.

2. A spraying device according to Claim 1, wherein in one position of the control member the by-pass passage is closed and a valve controlling the main passage partly open, and in another position of said mem-

ber, the by-pass passage is open and the valve controlling the main passage fully open.

3. A spraying device according to Claim 2, wherein means is provided for preventing movement of the said valve beyond said first-mentioned position when so desired.

4. A spraying device according to any of the preceding claims, wherein the container communicates with the outlet through a return passage regulated by an adjustable needle valve.

5. A spraying device according to any of the preceding Claims 2 to 4, wherein the main passage is controlled by a valve carried by an axially movable spindle intersecting the by-pass passage and having a reduced part forming a valve to open the by-pass passage when the valve controlling the main passage is fully open.

6. A spraying device according to Claim 5, wherein part of the valve spindle projecting externally of the device for co-operation with a control member, such as a lever, is provided with an arm movable from an inoperative position to a position in which it obstructs movement of the valve spindle to open the by-pass passage.

7. A spraying device according to Claim 5 or Claim 6, comprising a body in which the valve spindle is vertically disposed, means at opposite ends of the body for detachably mounting an outlet pipe and said container, means at one side of the body for detachably connecting an inlet pipe, and a hand lever pivoted to the body and adapted to operate said valve spindle against the action of a return spring.

8. A spraying device according to Claim 7, wherein the said container is adapted to serve as a handle and said lever extends beneath said container.

9. The improved spraying device, substantially as hereinbefore described with reference to the accompanying diagrammatic drawings.

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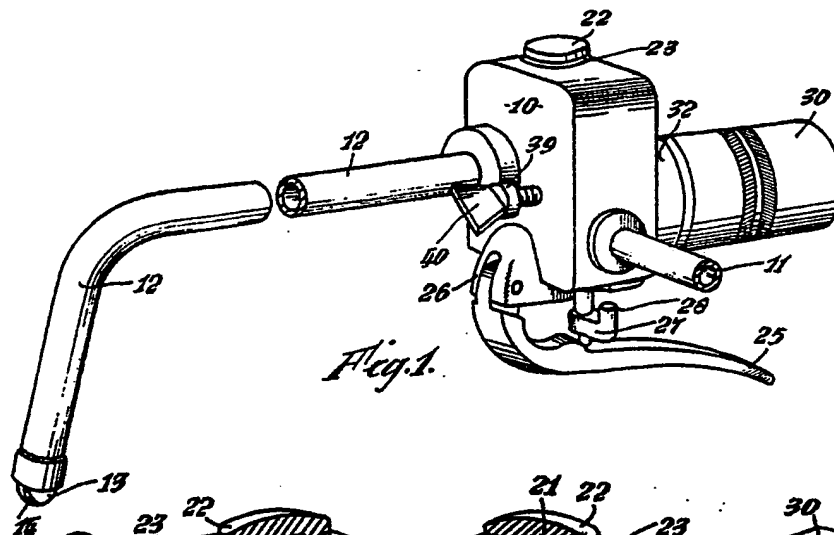


Fig. 1.

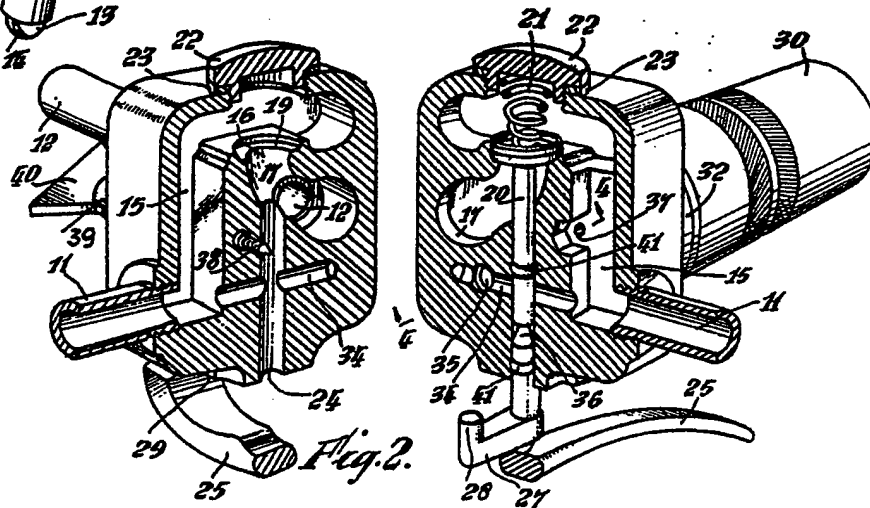


Fig. 2.

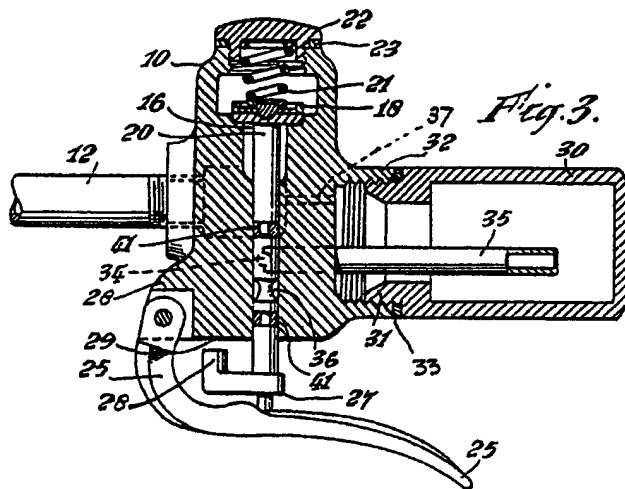


Fig. 3.

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2 SHEETS

This drawing is a reproduction of the Original on a reduced scale.

SHEETS 1 & 2

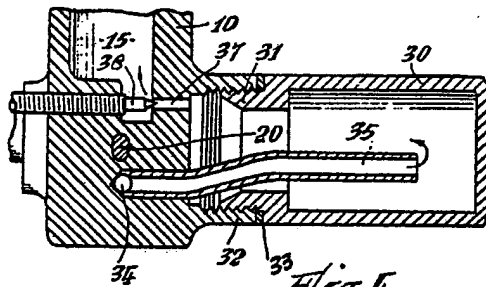


Fig. 1.

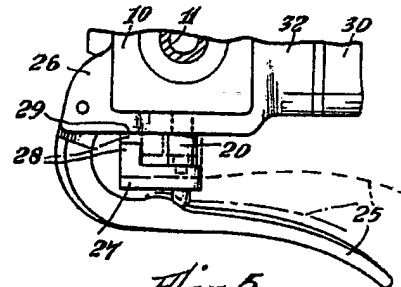


Fig. 5.

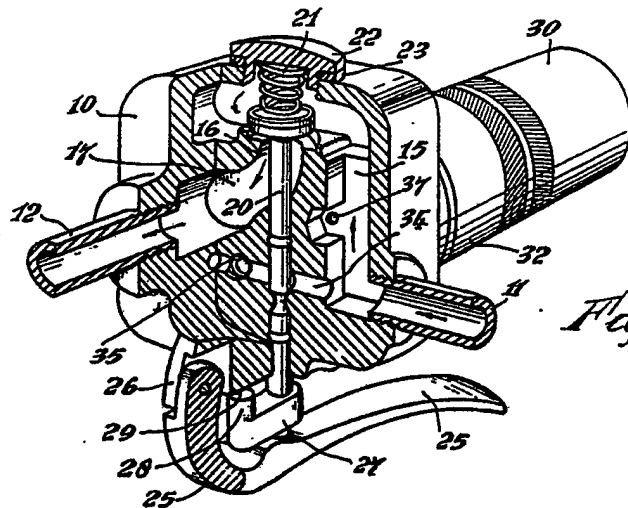


Fig. 6.

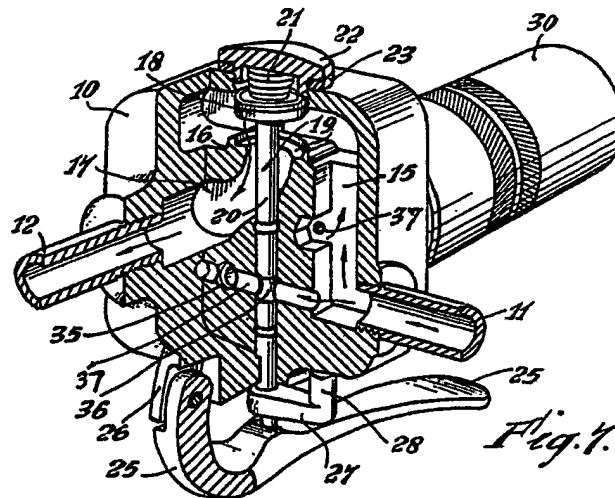
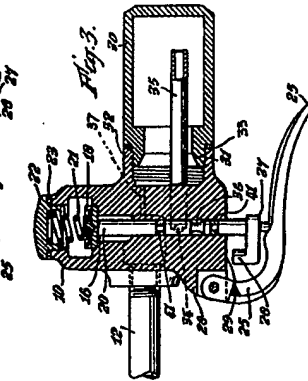
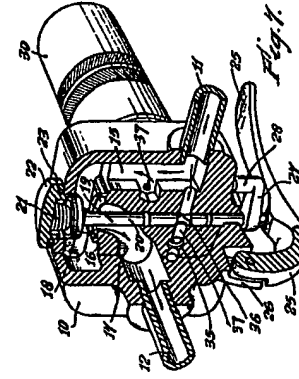
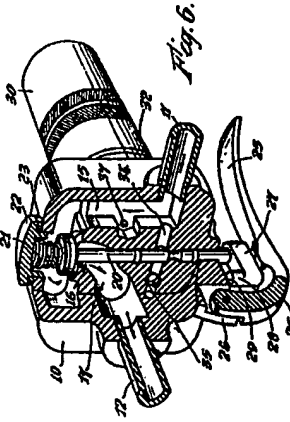
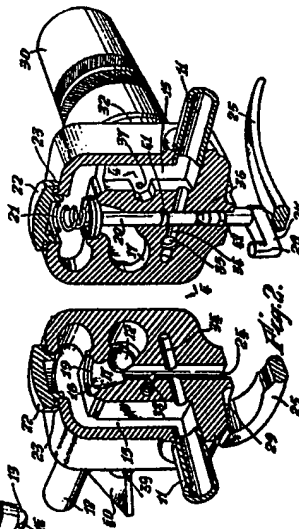
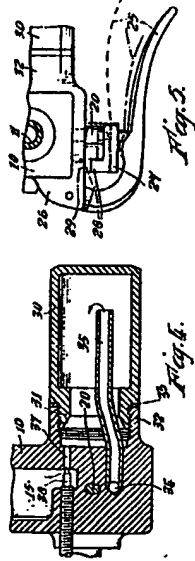
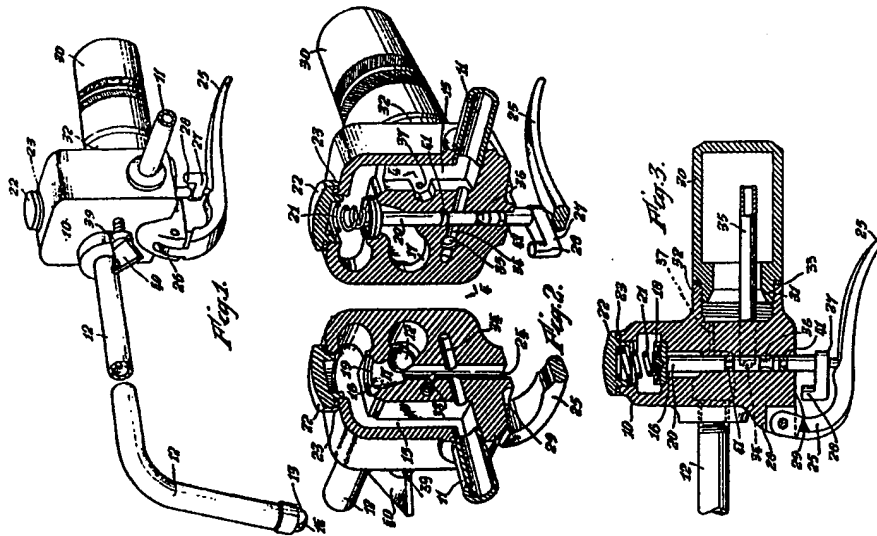


Fig. 7.

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